12. Non-Motorized Transportation

Tables and Figures

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1200. Definitions

The following definitions supplement the *AASHTO Bike Guide.*

AASHTO Bike Guide: The American Association of State Highway and Transportation Officials 1999 Guide for the Development of Bicycle Facilities

Adjacent Path: A path alignment that closely parallels the main roadway corridor

ADT: Average Daily Traffic

Commissioner: The Commissioner of the Alaska Department of Transportation and Public Facilities

Mid-block Crossing: Intersections formed when paths or sidewalks cross other transportation facilities at locations other than roadway-to-roadway intersections

Non-Motorized Transportation: Transportation by human power, including bicycling, walking, in-line skating, skiing, and other methods

Path: An improved facility, greater than or equal to 8 feet in width, physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Bicyclists, pedestrians, skaters, wheelchair (both self- and electric-powered) users, joggers, skiers, and other non-motorized users may use paths.

Shared Use Path: See "Path"

Rules of the Road: Regulations in the State of Alaska Administrative Code that govern the operation of motorized and non-motorized use of transportation facilities

Small Community: Topographically concentrated, unincorporated population areas large enough to support a nearby post office or local school

Trail: An unpaved or unimproved route, which may serve non-motorized or motorized off-road uses

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1210. Bicycle Facilities

1210.1. General

Expect bicycle traffic along most roads and streets. Where bicycles are allowed, all new construction and reconstruction must provide for use by bicyclists and pedestrians unless specifically exempted under the requirements of this chapter. Consider bicycle use on all other project types, and consider existing local bicycle plans when determining appropriate facilities for a project.

Shared use of a roadway is usually preferable to paths because accident rates are usually lower and because it is typically more cost effective.

When desirable values are provided without minimum values, the engineer must use other references, past experience, and/or engineering judgment to determine acceptable minimum values.

Required design criteria are normally stated in the form, "*Use* the following offsets" or "The offset *shall be*." Design criteria that are desirable or allowable, but not required, are normally stated in the form, "The offset *may be*" or "The offset *should be*."

1210.2. Waivers

Due to Alaska's developing nature and the need to provide basic transportation facilities within the limited transportation budget, there may be situations where use of full design criteria will price the improvement beyond reasonable cost. In such cases, develop a preliminary design to establish a basic construction cost estimate. Next, develop a second design using criteria less than stated minimums, including a construction cost estimate and a written comparison of the cost differential versus the negative aspects of the reduced geometric design standards.

Submit the proposed preliminary design with analysis and rationale for using below-minimum design criteria to the regional preconstruction engineer as a design waiver request. The regional preconstruction engineer will approve or disapprove the design waiver. If the regional preconstruction engineer concurs, furnish informational copies to the Department's chief engineer and bicycle/pedestrian coordinator. Furnish an informational copy of the approved waiver to the FHWA for national highway system (NHS) projects only.

When a waiver is necessary for the elimination (as opposed to reduction) of a facility that is normally required under the guidelines of this section, the waiver requires the endorsement of the regional preconstruction engineer and chief engineer, and the approval of the commissioner.

1210.3. Facility Types

1210.3.1 Freeways and Other Controlled-Access Facilities

Place signs on freeways or other controlled-access facilities to prohibit bicycle use in accordance with AS 19.20.020. If no reasonable alternate bicycle route is available, bicycle use of a controlled access facility, or portion of a controlled access facility, may be allowed.

1210.3.2 Rural

Bicycle facilities are not required on rural roadways with less than 1,000 ADT unless cost-effective analysis of accidents indicates improvements are needed.

Design for Class A riders, minimum. Paths for other classes of bicyclists are generally not cost effective in rural areas.

1210.3.3 Urban

Business and Commercial

Design for Class A riders, minimum.

Residential Areas and Small Communities

Design for all classes of riders, or design for Class A riders and identify/provide alternate routes for Class B/C riders.

1210.4. Design

1210.4.1 General

Use the *AASHTO Bike Guide*, as modified by this section, to design bicycle facilities.

If there is a conflict between the *AASHTO Bike Guide* and the *Alaska Traffic Manual* (ATM) for striping and signing, use the ATM.

1210.4.2 Shared Roadway

General

Use "Selecting Roadway Design Treatments to Accommodate Bicyclists" FHWA publication RD-92-073 to determine all shared roadway facility configurations. Shoulders may take the place of bike lanes for all sections except those with adjacent on-street parking.

1210.4.3 Shared Use Path

Separation Between Shared Use Paths and Roadways

The *AASHTO Bike Guide* recommends at least a 5-foot separation from the edge of roadway shoulder to edge of the path.

When paths are plowed during winter or when non-motorized use is available year-round, it is desirable to maintain a 10-foot separation between the edge of road traveled way and the nearest edge of the path, except where it is necessary to bring paths closer to the roadway (such as at public intersections as described in the Adjacent Path Crossings portion of this subsection).

Width and Clearance

Low ADT Paths

Paths meeting all the following criteria may use the widths in Table 1210-1:

- Less than 200 ADT (bicycles)
- Less than 100 ADT (pedestrians)
- Stopping sight distances meet minimum requirements of the *AASHTO Bike Guide*
- Not subject to edge damage by maintenance vehicles

Railings

End openings between rail panels must not exceed 6 inches.

Use fences only where they are needed for safety.

Path-Roadway Intersections

Mid Block Crossings

Skew median crossings of 6 feet or more in width by 45 degrees. This aligns the bicyclists so that they are looking in the direction of approaching traffic. See Figures 1210-1 and 1210-2.

Adjacent Path Crossings

Figure 1210-3 illustrates a design for path approaches to signalized intersections that improves visibility for cyclists.

At adjacent path crossings, the edge of path should be 6 feet, minimum, from the edge of traveled way on the parallel mainline roadway (see Figures 1210-4 [Desirable] and 1210-5).

Another, usually less desirable, option is to place the path crossing beyond the influence of stopping traffic at the intersection and where path users will be visible to motorists as shown in Figure 1210-4 (Mid-Block Crossing).

If you cannot provide sight triangles, and the path cannot be realigned in front of the stop location at side streets, provide regulatory and warning signing along the roadway and the path in accordance with the ATM.

Beyond the crossing, maintain normal path separation.

End of Path

Paths should end at a logical destination, such as a side street, school, or park.

The path should end at a highway shoulder where there is adequate sight distance and where it is convenient to cross the road. See Figure 1210-5. Designate and sign the path terminus to discourage wrong-way bicycle travel on road shoulders.

A path may also end perpendicular to any location along the road. Treat it the same as a side street intersection with a mainline through-route.

Pavement Structure

In general, paved shared-use paths should provide 2 inches of asphalt pavement concrete overlying 4 inches of crushed aggregate base course, on top of 2 feet of selected material, Type B or better quality.

You may use other surfacing materials. Unpaved paths are acceptable, although it is best to prevent erosion and material degradation due to rainfall, wind, or heavy use, and to allow for wheelchair use with a "hard, unyielding surface."

Structures

Bridges

It is desirable to provide the same widths for bicycle facilities across bridges that are provided approaching the bridge. For example, if there are 10-feet-wide

shoulders approaching a bridge, then it is desirable to provide 10-foot shoulders, plus any required shy distances, across the bridge. You may provide a separate structure to accommodate a path.

The clear width on structures between railings must not be less than 10 feet for two-way paths and 6 feet for one-way paths. The minimum vertical clearance to obstructions across the clear width of the path is 8 feet, 4 inches. Provide adequate access for maintenance and bridge inspection equipment.

See Section 1160.3.7a of this manual for allowable improvements to bridges for accommodation of bicycles on projects other than new construction or reconstruction.

Use 54-inch rail heights on bridges.

Path Undercrossings

Refer to Section 1130.7. of this manual for pedestrian crossing grade separation warrants and access control for grade-separated pedestrian crossings.

Where minimal fill heights are available, provide at least an 8-foot wide and 8-foot, 4-inch high clear area for two-way bicycle passage. A 10-foot by 10-foot clear area for two-way bicycle passage is desirable.

Options for undercrossings include metal multi-plate underpasses and concrete box culverts. Concrete box culverts require less overall height and width than metal underpasses.

Provide sight distance at each end of the underpass when reasonable. Right-of-way limitations and obstructions may limit the feasibility of providing adequate sight distance. In these cases, other traffic control measures, such as warning signs and striping, may be used. While skewing of the undercrossing usually increases cost, it is another method that you may consider to provide sight distance.

Path alignments are typically designed leading into pipes rather than skewing the pipes to meet the path alignment.

Guidance for maximum skew angles is provided in the *Handbook for Steel Drainage and Highway Construction Products, American Institute of Steel Construction, AISC.*

Drainage

When there are width constraints or when it is more cost effective, you may carry drainage across a sloped (uncrowned) path to a single ditch.

Lighting

If lighting is to be applied to a path, refer to the AASHTO publication, *An Informational Guide for Roadway Lighting.*

Table 1210-1

Minimum Path and Path Shoulder Widths for Low ADT Paths

The widths presented in this table may be used for shared use paths:

- With less than 200 ADT (bicycles)
- With less than 100 ADT (pedestrians)
- With stopping sight distances that meet minimum requirements of the *AASHTO Bike Guide*
- That will not be subject to edge damage by maintenance vehicles

For paths that do not meet any one or more of the above parameters, follow the guidance for path and shoulder width provided in the *AASHTO Bike Guide*.

Side Slope	Max. Slope Height	Min. Path Width	Min. Shoulder Width
4:1 (inclusive) or flatter	Any	8 feet	0
3:1 (inclusive) to 4:1 (not inclusive)	10 feet	8 feet	0
3:1 (inclusive) to 4:1 (not inclusive)	Over 10 feet	8 feet	2 feet
1.5:1 (inclusive) to 3:1 (not inclusive)	Any	8 feet	2 feet
Steeper than 1.5:1	6 inches or less	8 feet	0
Steeper than 1.5:1	Over 6 inches	*	*

* Use the guidance for shared-use path width and clearance provided in the *AASHTO Bike Guide*.

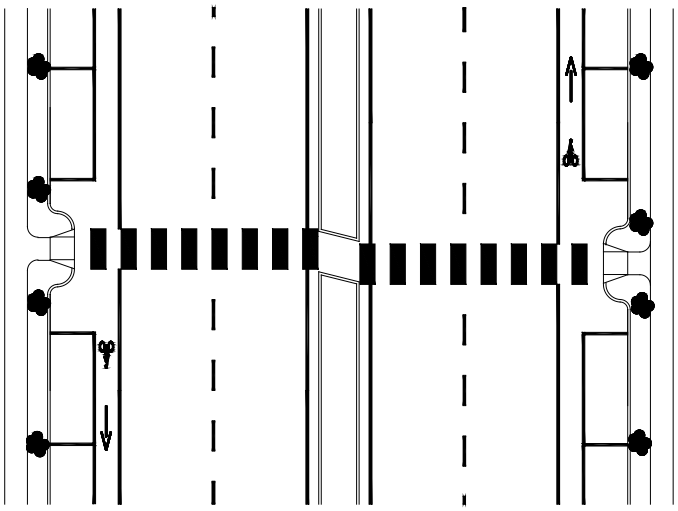


Figure 1210-1
Urban Mid-Block Crossing, With Parking and Median

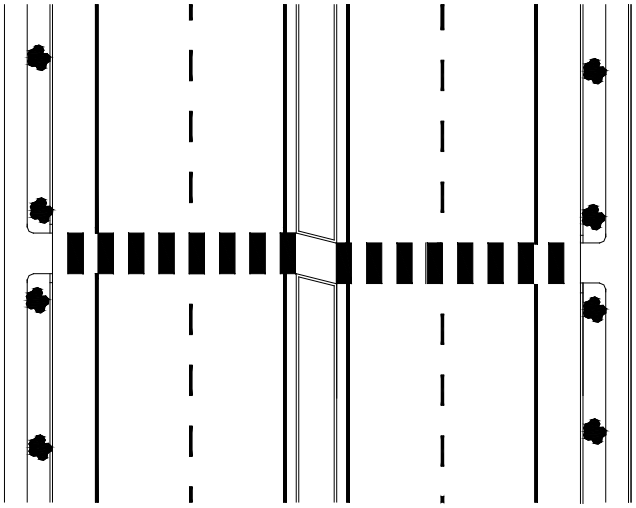


Figure 1210-2
At-Grade Mid-Block Crossing, with Median Without Parking

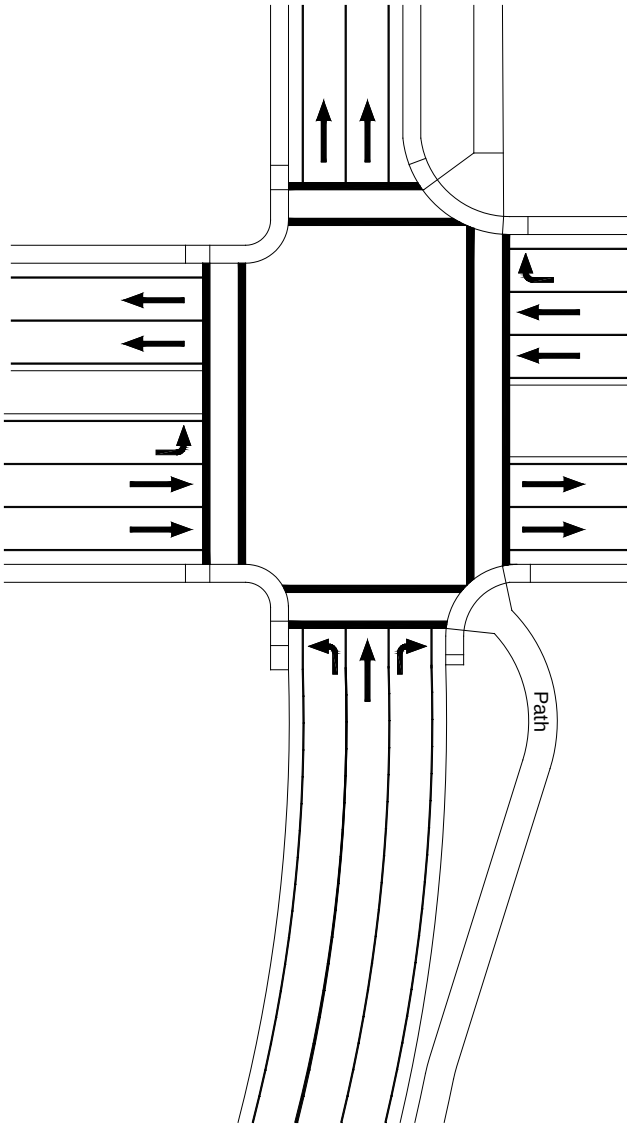
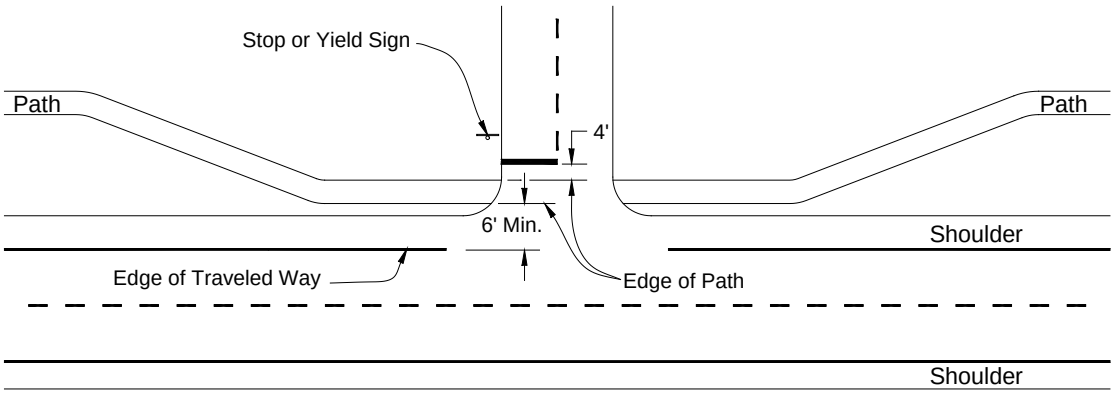
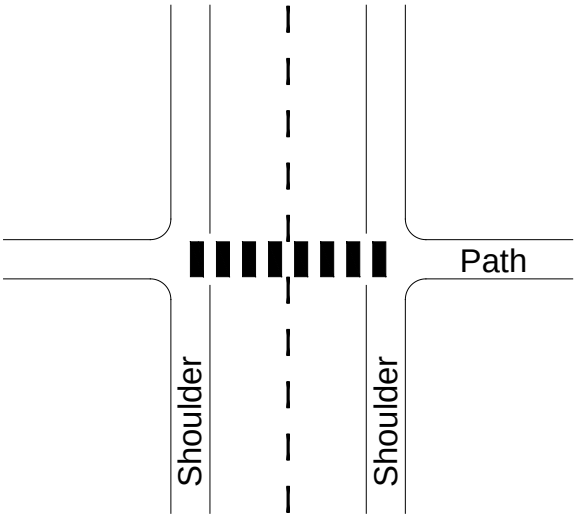


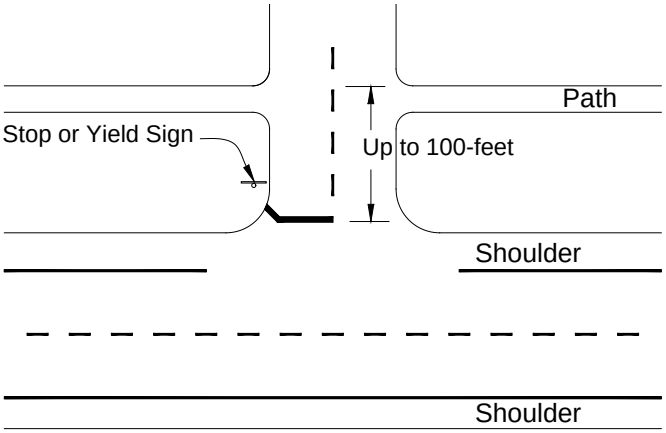
Figure 1210-3
Path Curves to Improve Visibility at Signalized Intersection
Reference: Oregon Bicycle and Pedestrian Plan, June 1995



Desirable



Mid-Block Crossing



Undesirable

Figure 1210-4
Path Configurations
At Crossings

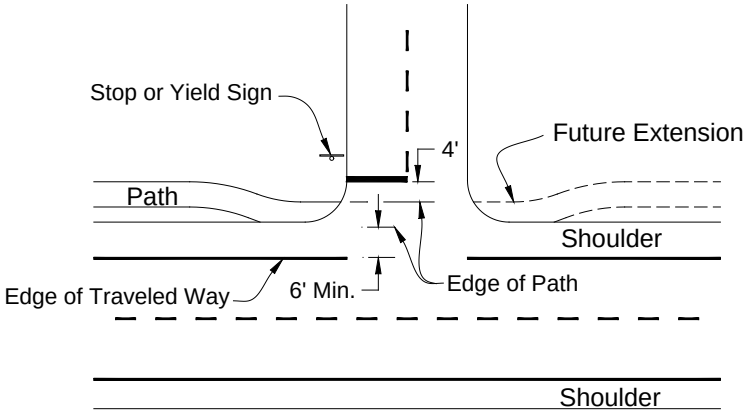


Figure 1210-5
Desirable Begin/End Path

1220. Pedestrian Facilities (Reserved)

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1230. Other Non-Motorized Facilities (Reserved)

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